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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/591,532	06/09/2000	David Robert Baldwin	TD-152	4374

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ROBERT GROOVER III
11330 VALLEYDALE DR.
DALLAS, TX 75230

EXAMINER

FOULADI SEMNANI, FARANAK

ART UNIT	PAPER NUMBER
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2674

DATE MAILED: 07/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/591,532

Applicant(s)

BALDWIN, DAVID ROBERT

Examiner

Faranak Fouladi

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 6 is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Interview Summary

Application No.

09/591,532

Applicant(s)

BALDWIN, DAVID ROBERT

Examiner

Faranak Fouladi

Art Unit

2672

All participants (applicant, applicant's representative, PTO personnel):

(1) Faranak Fouladi.

(3) Robert Groover.

(2) Jeffery Brier.

(4) Elizabeth Pham.

Date of Interview: 12 February 2004.

Type: a) ☒ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.

If Yes, brief description: _____.

Claim(s) discussed: 1.

Identification of prior art discussed: _____.

Agreement with respect to the claims f) ☐ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: Fig. 8 of present application was discussed to show the differences between the Duluk, Jr. et al. reference and the present application. Examiner agreed that further art search is required.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Faranak Fouladi
Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent and Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

DETAILED ACTION

1. This action is responsive to communications: application, filed on 06/09/2000; IDS, Paper # 5, filed on 01/22/01; Amendment A, filed on 4-09-03; Amendment B, filed on 01/26/04.
2. Claims 1, 3-8 are pending in the case, with claims 1, 3, 6, 7 and 8 being independent.
3. The present title of the application is "Direct-Mapped Texture Caching with Concise Tags" (as originally filed).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

"which is essentially unique mapped" renders the claims indefinite because it is not clear as to what is being claimed by using this phrase. What does ***"essentially unique mapped"*** mean here and also what is mapped to what that is unique? What does cache tag assignment mapped to?

6. Claim 1 recites the limitations "the tag length", "the different address" and "the different mip mapping" in step (b.) and "said condensed tags" in step (c.).
There is insufficient antecedent basis for these limitations in the claim.
7. Claim 4 recites the limitation "the level of detail" in line 6. There is insufficient antecedent basis for this limitation in the claim.
8. Claim 5 recites the limitation "the level of detail" in line 8. There is insufficient antecedent basis for this limitation in the claim.
9. Claim 6 recites the limitations "the texel" and "the x-" in part (a.); "the least significant bit" in part (b.); "the i", "the address", "the j" on first three lines of part (c.) and "the address" on last line of part (c.); "the largest map", "the map", "said addresses", and "said x-" on first three lines of part (d.) and "the second largest", "the map", "said addresses", "said x-axis" on second three lines of part (d.) and "the map", "said addresses" and "said x-axis" on last three lines of part (d.). There is insufficient antecedent basis for these limitations in the claim.
10. Claim 7 recites the limitations "the addresses" in line 3, "the x-axis" and "y-axis" in line 4 and "the map-level" in line 5. There is insufficient antecedent basis for these limitations in the claim.

11. Claim 8 recites the limitations "the different address" in line 2 of part (b.), "the different mip mapping" in line 3 of part (b.), "the mip mapping" in line 4 of part (b.) and "the maximum condensed" in line 5 of part (b.), "the spatial addresses" in line 5 of part (b.) and "said condensed tag" in part (c.). There is insufficient antecedent basis for these limitations in the claim.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1,3-5, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,790,130 to Gannett.
14. Regarding independent claim 1," a graphic processing method, comprising the steps of:
 - a. Caching texture memory fetches, using a cach tag assignment which is essentially unique mapped, (Gannett disclose in col. 19 lines 6-16 and col. 34 lines 60-64) while

- b. Generating condensed cash tags, by removing two bits from the tag length by means of remapping which exploits the different address resolutions implied by level of detail settings in the different mip-mapping processes to re-encode the mip mapping addresses (Gannett disclose in col. 19 lines 37- 40, col. 35 lines 47-64 and Fig. 18)
 - c. and using said condensed tags for said caching step (a.)” Gannett disclose in col. 36 lines 64- col. 37 line 2.
- 15. Regarding independent claim 3, “a graphic processing method, comprising caching texture memory fetches using a cache tag assignment in which a unique relation between a mip-mapping-level of- detail parameter and coordinate bits defines a smaller tag address for any given memory address.” Gannett disclose in col. 19 lines 37- 40, col. 35 lines 47-64 and Fig. 18.
- 16. Regarding dependent claim 4, “the graphic processing method of claim 3, wherein said cash tag assignment is generated by combining a mip-mapping-level-of-detail parameter which can have at least $2^{J-1}+1$ different values together with coordinate bits which can have as many as 2^K different values into fewer than $J+2K$ bits without loss of information; wherein J represents the number of bits for the level of detail and K represents the number of bits for arbitrary coordinate values.” Gannett discloses 23 bits for a tag in col. 19 lines 37- 40 that is less than 26 bits.

17. Regarding dependent claim 5, "the graphic processing method of claim 3, wherein said cash tag assignment is generated by combining a first parameter which can have at least $2^{J-1}+1$ different values together with coordinate bits which can have as many as 2^K different values into fewer than $J+2K$ bits without loss of information; wherein said first parameter and said coordinate bits are three-dimensional coordinates; and wherein J represents the number of bits for the level of detail and K represents the number of bits for arbitrary coordinate values." Gannett discloses in col. 19 lines 37- 40 and in col. 13 lines 62-67.
18. Regarding independent claim 7, "a cach system for a texture map comprising: a texture memory containing at least one map, wherein the addresses for said map can require m bits for the x-axis, n bits for the y-axis, and p bits for the map-level identifier; and a direct-mapped texture cach for said texture memory, configured to be accessed using lookup tags which requires $m+n-1$ or fewer bits." Gannett discloses in col. 19 lines 34-64.
19. Regarding independent claim 8, "a graphic processing method, comprising the steps of:
 - a. caching texture memory fetches, using a cach tag assignment which is essentially unique mapped, (Gannett disclose in col. 19 lines 6-16 and col. 34 lines 60-64) while

- b. generating condensed cash tags, by means of remapping which exploits the different address resolutions implied by level of detail settings in the different mip-mapping processes to re-encode the mip mapping addresses into a length which is only one bit longer than the maximum condensed length of the spatial addresses (Gannett disclose in col. 19 lines 37- 40, and Fig. 18)
- c. and using said condensed tags for said cashing step (a.)” Gannett disclose in col. 36 lines 64- col. 37 line 2.

Allowable Subject Matter

20. Claim 6 is allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art cited in its entirety fails to teach or suggest a method of generating condensed cache tags which codes the map level identifier as claimed in step (d) of claim 6 along the other steps.

Response to Arguments

21. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892 form.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Faranak Fouladi** whose telephone number is **703-305-3223**. The examiner can normally be reached on Mon-Fri from 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Michael Razavi** can be reach at **703-305-4713**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, DC. 20231

Or faxed to: 703-872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, sixth-floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is 703-306-0377.

Faranak Fouladi-Semnani
Patent Examiner
Art Unit 2672



MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600